



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/725,160	12/01/2003	Lei Wu	ART-00104.P.1.2	4793
24232 7590 02/26/2008 DAVID R PRESTON & ASSOCIATES APC 5850 OBERLIN DRIVE SUITE 300 SAN DIEGO, CA 92121				
EXAMINER YANG, NELSON C				
ART UNIT		PAPER NUMBER		
1641				
MAIL DATE		DELIVERY MODE		
02/26/2008		PAPER		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/725,160

**Applicant(s)**

WU ET AL.

**Examiner**

Nelson Yang

**Art Unit**

1641

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 31 October 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 49-68 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 49-68 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☒ Certified copies of the priority documents have been received in Application No. 09/399,299.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/06)  
Paper No(s)/Mail Date 10/31/07.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on October 31, 2007 has been entered.

### ***Response to Amendment***

2. Applicant's amendment of claims 49, 51, 59, 60, 61 is acknowledged and has been entered.
3. Claims 49-68 are currently pending and under examination.

### ***Rejections Withdrawn***

4. Applicant's arguments, see p.5, filed October 31, 2007, with respect to the objection to the priority have been fully considered and are persuasive. The objection of the priority has been withdrawn.
5. Applicant's arguments, see p.6-10, filed October 31, 2007, with respect to the rejection of claims 49-68 under 35 U.S.C. 102(e) as being anticipated by Burdon et al. [US 6,572,830] have been fully considered and are persuasive. The rejection of claims 49-68 under 35 U.S.C. 102(e) as being anticipated by Burdon et al. [US 6,572,830] has been withdrawn.

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 49-54, 56 59-64 rejected under 35 U.S.C. 103(a) as being unpatentable over Parton et al. [US 5,653,859] in view of Hofmann [US 4,911,806].

With respect to claims 49, 59, Parton et al. teach an array of electrodes comprising two parallel rows of electrodes (column 2, lines 25-37) for migrating particles over the array via traveling wave field migration (abstract). The particles may comprise ligands bound to magnetic particles (column 3, lines 34-60), such that complexes may be concentrated (column 4, lines 10-16). Parton et al. fail to specifically teach that each electrode would be an electromagnetic unit that would also act as a locus.

Hofmann, however, further teach modification of electrodes with a coil, and applying electric signals to the electrodes and the coil to generate electric and magnetic fields (column 1, lines 48-65). By selecting the frequency of the electric and magnetic fields, particles having different polarization relaxation frequencies and sizes will migrate at different velocities and thereby sort into various fractions (column 1, line 66—column 2, line 2).

Therefore, it would have been obvious to modify the electrodes of Parton et al. by including coils, and to apply electric signals to the electrodes and the coil to generate electric and magnetic fields, so that particles having different polarization relaxation frequencies and sizes

would migrate at different velocities and thereby sort into various fractions, allowing for better control over the magnetic particles in a fluid sample or solution.

8. With respect to claims 50, 60, Parton et al. teach particles comprising ligands bound to magnetic particles (column 3, lines 34-60),
9. With respect to claims 51, 61, Parton et al. teach covalent binding (column 9, lines 40-45).
10. With respect to claims 52, 62, Parton et al. teach DNA probes (column 9, lines 10-15).
11. With respect to claims 53, 63, Parton et al. teach a magnetophoretic device such as an electro-magnet (column 8, lines 20-28).
12. With respect to claims 54, 64, Parton et al. teach that a rotating magnetic field is applied to the electrode array (column 10, lines 55-60), thus acting as a switching means.
13. With respect to claims 56, 66, the space between the electrodes of Parton et al. would constitute dips (fig. 1, 2).
14. With respect to claims 57, 67, Parton et al. teach electrode configuration that is substantially horizontal, wherein the electrodes are in two rows located on either side of the traveling particles (fig.1, column 6, lines 25-38).
15. With respect to claims 58, 68, the electrode configuration disclosed by Parton et al. is substantially vertical, wherein particles move over parallel electrodes (fig. 6, column 6, line 65-column 7, line 5).
16. Claims 55, 65 are rejected under 35 U.S.C. 103(a) as being unpatentable over Parton et al. [US 5,653,859] in view of Hofmann [US 4,911,806] in light of Lettini et al. [US 3,922,050].

With respect to claims 55, 65, the electrodes of Parton et al. as modified by Hofmann would comprise a core (the electrode) (column 1, lines 48-65). Although neither Parton et al. nor Hofmann specifically disclose a terminal structure, one of ordinary skill in the art at the time of the invention would have known that in order for a conductive body of material to be utilized to create a particular electrical function, such as in electrodes, it is necessary to provide an electrical contact such as electrical terminals to the body of electrically conducting material (column 1, lines 33-50).

Therefore, one of ordinary skill in the art would have known that to utilize the electrodes of Parton et al. and Hoffmann, so that electrical signals could be applied, electrical terminal structures would have been required.

#### ***Response to Arguments***

17. Applicant's arguments with respect to claims 49-68 have been considered but are moot in view of the new ground(s) of rejection.

#### ***Conclusion***

18. No claims are allowed.

19. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nelson Yang whose telephone number is (571)272-0826. The examiner can normally be reached on 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Long V. Le can be reached on (571)272-0823. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

20. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Nelson Yang/  
Patent Examiner, Art Unit 1641